(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 14 July 2005 (14.07.2005)

PCT

(10) International Publication Number WO 2005/063305 A1

(51) International Patent Classification⁷:

A61K 49/22

(21) International Application Number:

PCT/IB2004/004230

(22) International Filing Date:

21 December 2004 (21.12.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

03029534.9

22 December 2003 (22.12.2003) E

(71) Applicant (for all designated States except US): BRACCO RESEARCH SA [CH/CH]; 31, route de la Galaise, CH-1228 Plan les Ouates (CH).

(72) Inventors; and

(75) Inventors/Applicants (for US only): SCHNEIDER, Michel [FR/CH]; 34, Route d'Annecy, CH-1256 Troinex (CH). BUSSAT, Philippe [FR/FR]; 46, allée du Salève, F-74160 Feigères (FR). YAN, Feng [FR/CH]; 7, Chemin des Champs Gottreux, CH-1216 Grand Lancy (CH). SENENTE, Anne [FR/CH]; 15, rue des Mouettes, CH-1227 Carouge (CH).

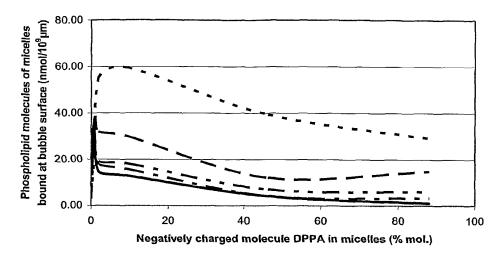
(74) Agent: RAVIZZA, Claudio; Bracco Research SA, Intellectual Property Department, 31 Route de la Galaise, CH-1228 Plan-les-Ouates (CH).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: GAS-FILLED MICROVESICLE ASSEMBLY FOR CONTRAST IMAGING



(57) Abstract: Assembly comprising a gas-filled microvesicle and a structural entity which is capable to associate through an electrostatic interaction to the outer surface of said microvesicle (microvesicle associated component - MAC), thereby modifying the physico-chemical properties thereof. Said MAC may optionally comprise a targeting ligand, a bioactive agent, a diagnostic agent or any combination thereof. The assembly of the invention can be formed from gasfilled microbubbles or microballoons and a MAC having a diameter of less than 100 pm, in particular a micelle and is used as an active component in diagnostically and/or therapeutically active formulations, in particular for enhancing the imaging in the field of ultrasound contrast imaging, including targeted ultrasound imaging, ultrasound-mediated drug delivery and and other imaging techniques such as molecular resonance imaging (MRI) or nuclear imaging.

5 A1

WO 2005/063305 A1



Declarations under Rule 4.17:

as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designation US
- of inventorship (Rule 4.17(iv)) for US only
- of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.